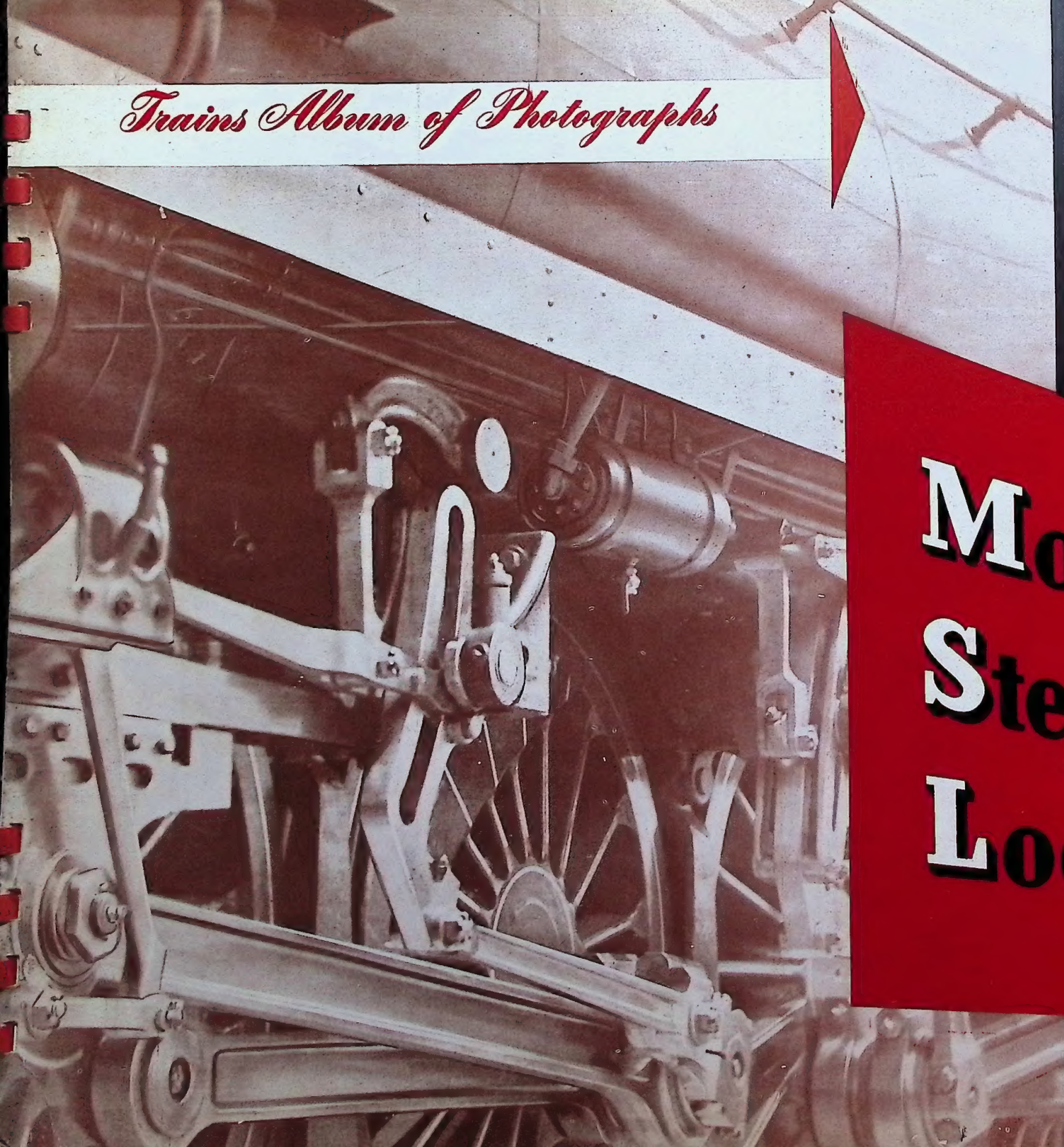
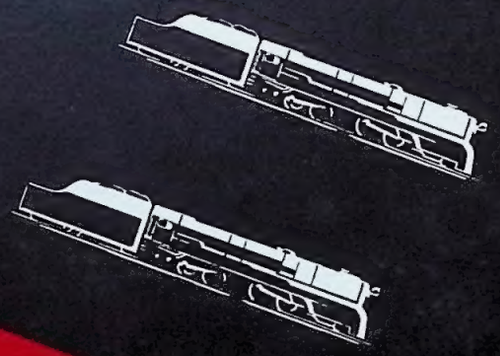
Trains Album of Photographs

Number 10





Modern Steam Locomotives

Trains Album of Railroad Photographs

Book 10

MODERN STEAM LOCOMOTIVES

Kalmbach Publishing Co.
Milwaukee 3, Wisconsin

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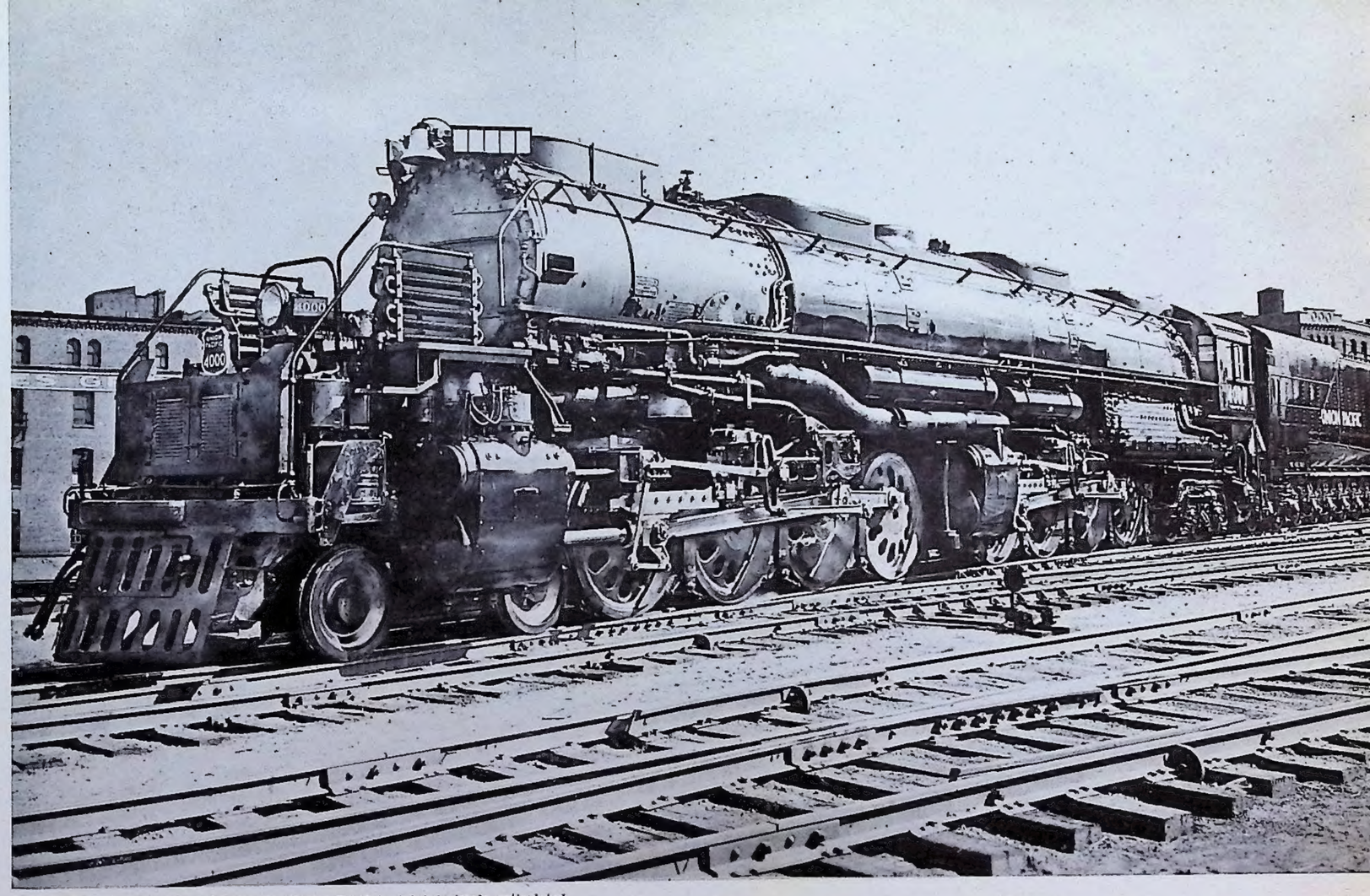

World's most powerful steam locomotive, Union Pacific's 4-8-8-4 simple articulated.

The steam locomotive is the most grandly fascinating mechanism conceived by man. It is the personification of power.

Basically the steam locomotive is the same machine as George Stephenson's Rocket of 1825, but it has evolved in every detail until today it is such a highly efficient machine that in the United States it moves goods for less than one cent per ton mile. It was the economical mass transportation made possible by the locomotive which built America into a nation and which now makes possible an industrial productivity greater than any the world has before known.

Despite hard competition from newer forms of motive power the reciprocating steam locomotive, improved and modified into a high horsepower machine quite unlike the locomotive of even 20 years ago, continues to dominate the American railroad scene. It is chosen by unsentimental general managers whose opinion on locomotives is strictly a matter of which will do the required job for the least expenditure, fuel, wages, repairs, lubrication, depreciation and interest all included. And the steam locomotive is so closely competitive with the Diesel and the electric locomotive that there is no general rule and each job must be closely analyzed, with fractions of cents often determining which type of locomotive will be used. In first cost the steam locomotive is much less per horsepower than the others, and it has the big advantage of using our cheapest and most abundant fuel, coal.

No longer does the steam locomotive consider a 100-mile division a day's work. The magnificent Hudsons and Mohawks of the New York Central run 927 miles at a stretch between Chicago and Harmon, N. Y. The Milwaukee Road puts its hefty F-6 4-6-4's over 1335 miles from Chicago to Harlowton, Mont., and the steam locomotive retires there only because it is exchanged for the electric which takes the Olympian over the Rockies. On the Santa Fe the same steam locomotive which breasted steep Cajon and Raton passes sometimes puffs into Chicago's venerable Dearborn Station, a matter of 2257 miles.

For speed the steam locomotive can compete with the best of them. Locomotives have been designed, like the Milwaukee Road Hiawatha type Atlantic, which develop maximum horsepower at 100 miles per hour and have exceeded 120 miles an hour in service. For the steam locomotive is essentially a high speed machine. As it gets up to speed its power is limited only by the capacity of the boiler to generate steam, and perhaps no phase of the locomotive has been more improved in recent decades than the boiler. Above the once-magic mile-a-minute speed the steam locomotive can accelerate from a slowdown with remarkable energy, and this means much in maintaining schedule on high speed main lines with long runs between stops.

Yes, the steam locomotive still has the chug (although the Pennsylvania's turbine locomotive even does away with that) but Casey Jones would be rather perplexed in a modern cab with its multitudinous control valves for boiler auxiliaries, its low water alarm, and its valve pilot. He would find little use for his long spouted oil can in these days of pressure lubrication and roller bearings. And his fireman would be chagrined at the adeptness of the stoker at keeping an even fire.

But one characteristic Casey Jones would find the same. The steam locomotive is still a custom-built machine, designed to fit the specific job to which it is assigned. Each class of locomotives is distinctly individual, and the locomotives of a railroad often follow a variation of design which identifies them at once to the experienced locomotive connoisseur. The builders' photographs which we have selected for this album show, for instance, how different the 4-8-4 type can be upon various railroads, and they show how Pennsylvania Railroad locomotives are always Pennsylvania and New York Central are always New York Central.

We have picked those locomotives which give the best overall picture of modern practice, locomotives of many wheel arrangements and of many railroads. Care has been taken to include locomotives which have particularly distinguished themselves by perfection of design, although it is inevitable that our opinion will not agree 100 per cent with others. The photographs, all furnished by the builders, are spread across the full width of the page to bring out details to best advantage. A special printing process and paper make the prints equal to photographic glossies. Principal dimensions are added to make the information complete and to enable comparison. We hope you enjoy the book as much as we have enjoyed its preparation.

TRAINS ALBUM OF PHOTOGRAPHS

By the Editors of Trains Magazine

Book 1—Eastern Railroads.

Book 2—Far Western Railroads.

Book 3—Midwestern Railroads.

Book 4—Colorado Railroads.

Book 5—Southern Railroads.

Book 6—New England Railroads.

Book 7—Electric Railways.

Book 8—Pennsylvania Railroad.

Book 9—New York Central Railroad.

Book 10—Modern Steam Locomotives.

Book 11—Southern Pacific Lines.

Book 12—Santa Fe Railway.

Book 13—Baltimore & Ohio Railroad.

Book 14—Erie Railroad.

Book 15—Great Northern Railway.

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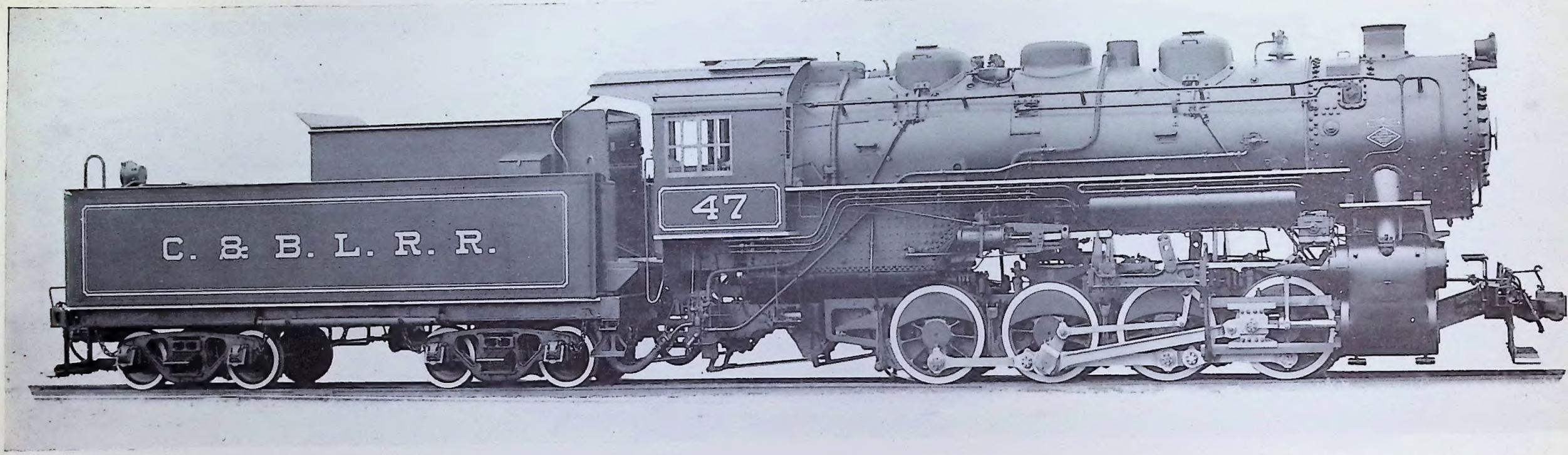
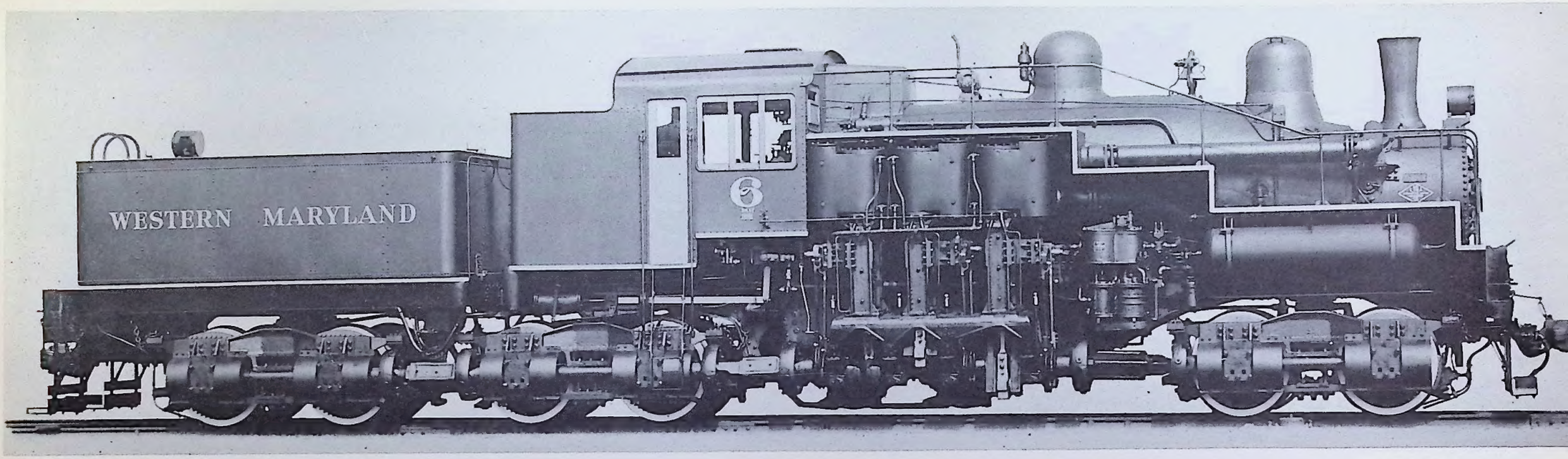


Conemaugh & Black Lick heavy switcher

Road numbers of this series	47-48
Built	Lima, 1941
Cylinders, diameter and stroke, in.	25 x 28
Diameter of drivers, in.	51
Tractive force, lbs.	55,400
Boiler pressure, lbs. per sq. in.	190
Total weight of engine, lbs.	230,800
Weight of engine and tender, lbs.	352,817
Grate area, sq. ft.	47.0
Evaporative heating surface, sq. ft.	2777
Superheater heating surface, sq. ft.	639
Tender capacity: Tons of coal	11
Gallons of water	8200

United States Army general service wartime Consolidation

Road numbers of this series	1624
Built	Alco, 1942
Cylinders, diameter and stroke, in.	19 x 26
Diameter of drivers, in.	57
Tractive force, lbs.	31,500
Boiler pressure, lbs. per sq. in.	225
Total weight of engine, lbs.	161,000
Weight on drivers, lbs.	140,000
Weight on leading truck, lbs.	21,000
Weight of engine and tender, lbs.	276,500
Grate area, sq. ft.	41
Evaporative heating surface, sq. ft.	1765
Superheater heating surface, sq. ft.	471
Tender capacity: Tons of coal	10
Gallons of water	6500

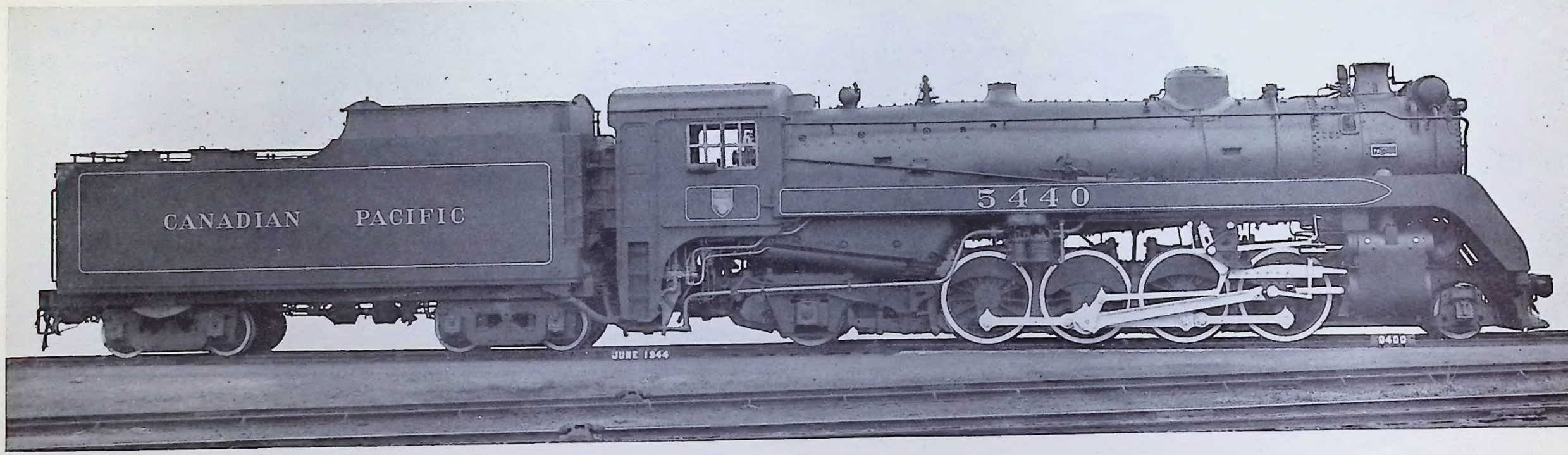


Western Maryland Shay geared engine for 10 per cent grades

Road numbers of this series	6
Built	Lima, 1945
Cylinders, diameter and stroke, in.	17 x 18
Diameter of drivers, in.	48
Tractive force, lbs.	59,740
Boiler pressure, lbs. per sq. in.	200
Total weight of engine, lbs.	324,000
Weight on drivers, lbs.	324,000
Weight of engine and tender, lbs.	324,000
Grate area, sq. ft.	48.5
Evaporative heating surface, sq. ft.	1849
Superheater heating surface, sq. ft.	429
Tender capacity: Tons of coal	9
Gallons of water	6000

Atlanta & West Point Mikado type freight locomotive

Road numbers of this series	380 and 430
Built	Baldwin, 1944
Cylinders, diameter and stroke, in.	27 x 32
Diameter of drivers, in	63
Tractive force, lbs.	63,000
Boiler pressure, lbs. per sq. in.	200
Total weight of engine, lbs.	337,000
Weight on drivers, lbs.	260,000
Weight on leading truck, lbs.	28,500
Weight on trailing truck, lbs.	48,500
Weight of engine and tender, lbs.	610,000
Grate area, sq. ft.	70.3
Evaporative heating surface, sq. ft.	4000
Superheater heating surface, sq. ft.	1276
Tender capacity: Tons of coal	18
Gallons of water	18,000

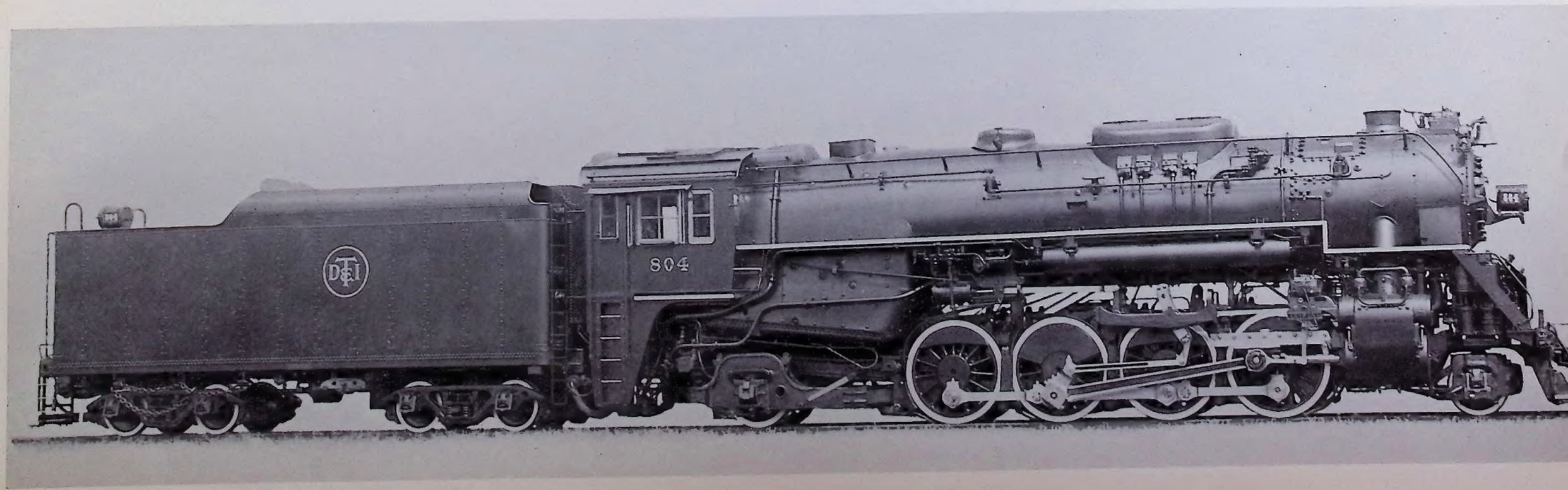


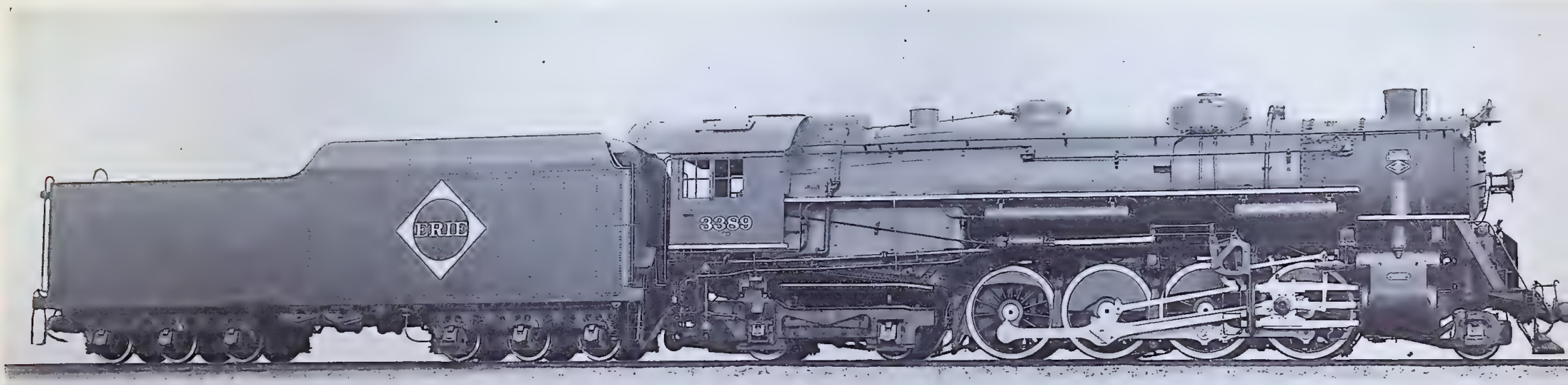
Canadian Pacific Mikado type freight locomotive

Road numbers of this series	5440
Built	Montreal, 1944
Cylinders, diameter and stroke, in.	22 x 32
Diameter of drivers, in.	63
Tractive force, lbs.	57,500
Boiler pressure, lbs. per sq. in.	275
Total weight of engine, lbs.	337,000
Weight on drivers, lbs.	246,400
Weight on leading truck, lbs.	30,150
Weight on trailing truck, lbs.	60,450
Weight of engine and tender, lbs.	537,770
Grate area, sq. ft.	70.3
Evaporative heating surface, sq. ft.	3437
Superheater heating surface, sq. ft.	970
Tender capacity: Tons of coal	18
Gallons of water	10,000

Detroit, Toledo & Ironton Mikado type freight locomotive

Road numbers of this series	804-807
Built	Lima, 1941
Cylinders, diameter and stroke, in.	23 x 30
Diameter of drivers, in.	63
Tractive force, lbs.	55,600
Boiler pressure, lbs. per sq. in.	260
Total weight of engine, lbs.	369,500
Weight on drivers, lbs.	248,500
Weight on leading truck, lbs.	50,100
Weight on trailing truck, lbs.	70,900
Weight of engine and tender, lbs.	563,666
Grate area, sq. ft.	66.9
Evaporative heating surface, sq. ft.	4009
Superheater heating surface, sq. ft.	1815
Tender capacity: Tons of coal	18
Gallons of water	14,300





Erie Railroad Berkshire type freight locomotive

Road numbers of this series	3385-3404
Built	Lima, 1929
Cylinders, diameter and stroke, in.	28½ x 32
Diameter of drivers, in.	70
Tractive force (with booster), lbs.	85,000
Boiler pressure, lbs. per sq. in.	250
Total weight of engine, lbs.	468,800
Weight on drivers, lbs.	286,500
Weight on leading truck, lbs.	49,000
Weight on trailing truck, lbs.	133,300
Weight of engine and tender, lbs.	846,800
Grate area, sq. ft.	100
Evaporative heating surface, sq. ft.	5697
Superheater heating surface, sq. ft.	2545
Tender capacity: Tons of coal	28
Gallons of water	20,000

Richmond, Fredericksburg & Potomac Berkshire freight locomotive

Road numbers of this series	571-580
Built	Lima, 1942
Cylinders, diameter and stroke, in.	25 x 34
Diameter of drivers, in.	69
Tractive force, lbs.	64,100
Boiler pressure, lbs. per sq. in.	245
Total weight of engine, lbs.	433,200
Weight on drivers, lbs.	270,900
Weight on leading truck, lbs.	50,300
Weight on trailing truck, lbs.	112,000
Weight of engine and tender, lbs.	736,600
Grate area, sq. ft.	90.3
Evaporative heating surface, sq. ft.	4772
Superheater heating surface, sq. ft.	1932
Tender capacity: Tons of coal	25
Gallons of water	22,000

Pere Marquette Berkshire type freight locomotive

Road numbers of this series	1216-1227
Built	Lima, 1941
Cylinders, diameter and stroke, in.	26 x 34
Diameter of drivers, in.	69
Tractive force, lbs.	69,350
Boiler pressure, lbs. per sq. in.	245
Total weight of engine, lbs.	442,500
Weight on drivers, lbs.	277,600
Weight on leading truck, lbs.	50,900
Weight on trailing truck, lbs.	114,000
Weight of engine and tender, lbs.	727,300
Grate area, sq. ft.	90.3
Evaporating heating surface, sq. ft.	4777
Superheater heating surface, sq. ft.	1932
Tender capacity: Tons of coal	22
Gallons of water	22,000

Louisville & Nashville Berkshire type freight locomotive

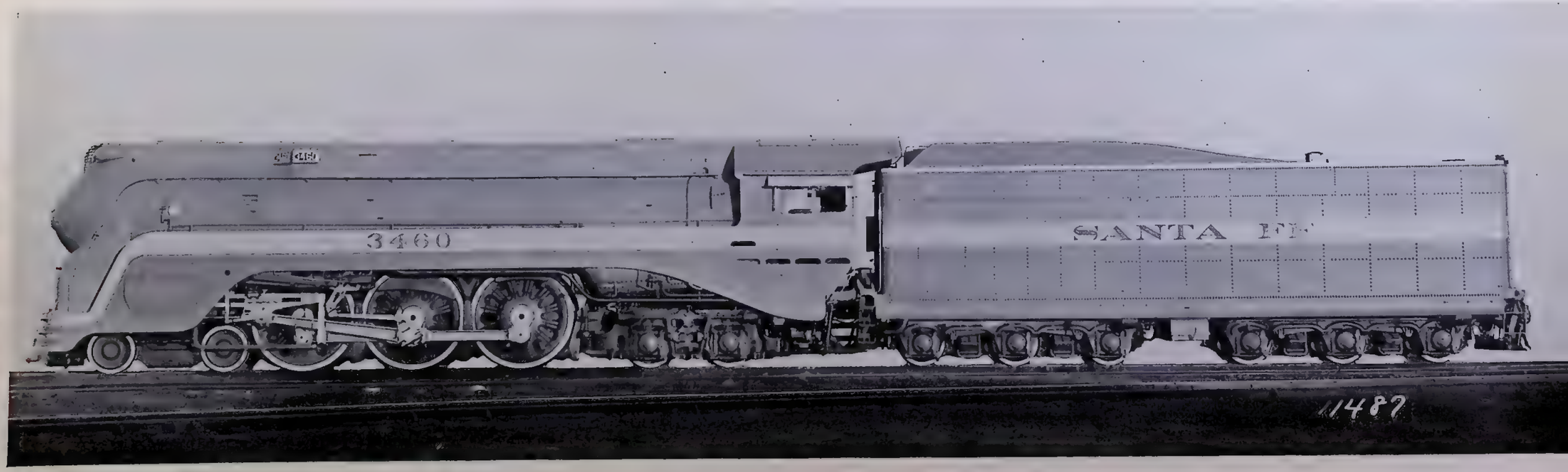
Road numbers of this series	1964-1969
Built	Baldwin, 1944
Cylinders, diameter and stroke, in.	25 x 32
Diameter of drivers, in.	69
Tractive force, lbs.	65,290
Boiler pressure, lbs. per sq. in.	265
Total weight of engine, lbs.	447,200
Weight on drivers, lbs.	268,200
Weight on leading truck, lbs.	51,600
Weight on trailing truck, lbs.	127,400
Weight of engine and tender, lbs.	750,200
Grate area, sq. ft.	90.2
Evaporative heating surface, sq. ft.	4654.3
Superheater heating surface, sq. ft.	1908
Tender capacity: Tons of coal	24
Gallons of water	22,000

Boston & Maine Pacific for fast passenger service

Road numbers of this series	3710-3714
Built	Lima, 1934
Cylinders, diameter and stroke, in.	23 x 28
Diameter of drivers, in.	80
Tractive force (with booster), lbs.	52,800
Boiler pressure, lbs. per sq. in.	260
Total weight of engine, lbs.	339,200
Weight on drivers, lbs.	209,500
Weight on leading truck, lbs.	61,400
Weight on trailing truck, lbs.	68,300
Weight of engine and tender, lbs.	579,500
Grate area, sq. ft.	66.9
Evaporative heating surface, sq. ft.	3848
Superheater heating surface, sq. ft.	966
Tender capacity: Tons of coal	18
Gallons of water	12,000

Santa Fe Hudson (only this one streamlined) for passenger service

Road numbers of this series	3460-3465
Built	Baldwin, 1937
Cylinders, diameter and stroke, in.	23½ x 29½
Diameter of drivers, in.	84
Tractive force, lbs.	49,300
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	420,400
Weight on drivers, lbs.	211,400
Weight on leading truck, lbs.	90,000
Weight on trailing truck, lbs.	119,000
Weight of engine and tender, lbs.	817,800
Grate area, sq. ft.	98.5
Evaporative heating surface, sq. ft.	4770
Superheater heating surface, sq. ft.	2080
Tender capacity: Gallons of oil	7000
Gallons of water	21,000

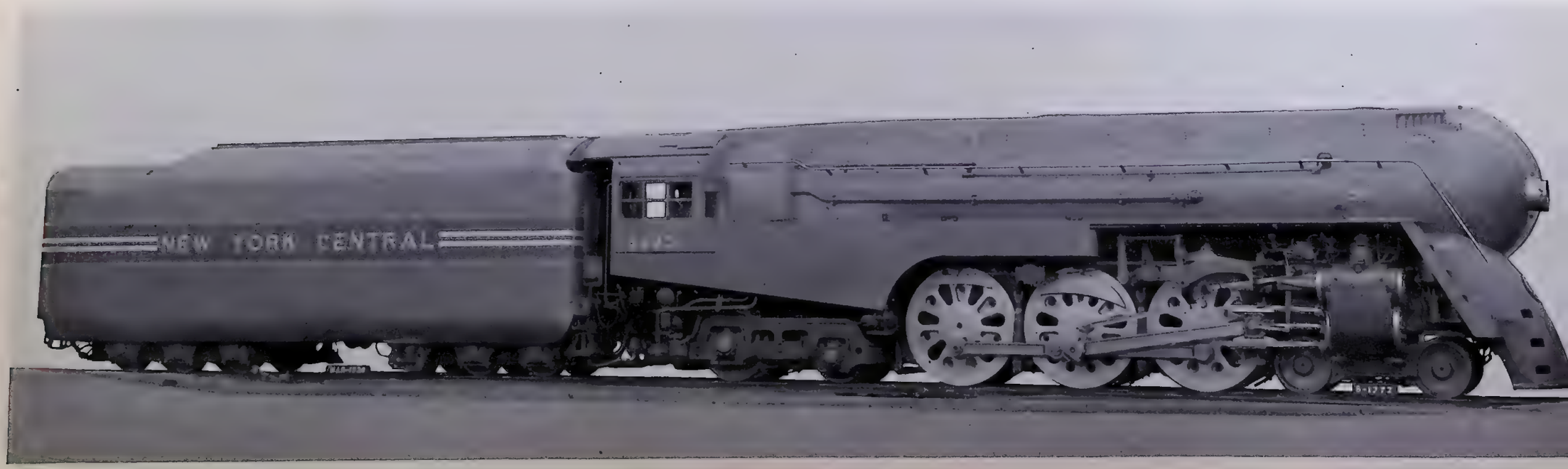


Chicago & North Western Hudson for high speed passenger service

Road numbers of this series	4001-4009
Built	Alco, 1938
Cylinders, diameter and stroke, in.	25 x 29
Diameter of drivers, in.	84
Tractive force, lbs.	55,000
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	412,000
Weight on drivers, lbs.	216,000
Weight on leading truck, lbs.	87,000
Weight on trailing truck, lbs.	109,000
Weight of engine and tender, lbs.	717,960
Grate area, sq. ft.	90.7
Evaporative heating surface, sq. ft.	3979
Superheater heating surface, sq. ft.	1884
Tender capacity: Tons of coal	25
Gallons of water	20,000

New York Central Hudson streamlined for Twentieth Century Limited

Road numbers of this series	5445-5454
Built	Alco, 1938
Cylinders, diameter and stroke, in.	22½ x 29
Diameter of drivers, in.	79
Tractive force, lbs.	engine, 43,400; booster, 12,100
Boiler pressure, lbs. per sq. in.	275
Total weight of engine, lbs.	365,500
Weight on drivers, lbs.	201,800
Weight on leading truck, lbs.	67,100
Weight on trailing truck, lbs.	96,600
Weight of engine and tender, lbs.	681,800
Grate area, sq. ft.	82
Evaporative heating surface, sq. ft.	4187
Superheater heating surface, sq. ft.	1745
Tender capacity: Tons of coal	28
Gallons of water	13,600



Milwaukee Road class F-7 Hudson, designed for Hiawatha service

Road numbers of this series	100-105
Built	Alco, 1938
Cylinders, diameter and stroke, in.	23½ x 30
Diameter of drivers, in.	84
Tractive force, lbs.	50,300
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	415,000
Weight on drivers, lbs.	216,000
Weight on leading truck, lbs.	82,500
Weight on trailing truck, lbs.	116,500
Weight of engine and tender, lbs.	790,000
Grate area, sq. ft.	96.5
Evaporative heating surface, sq. ft.	4166
Superheater heating surface, sq. ft.	1695
Tender capacity: Tons of coal	25
Gallons of water	20,000

Boston & Maine Mountain type freight locomotive

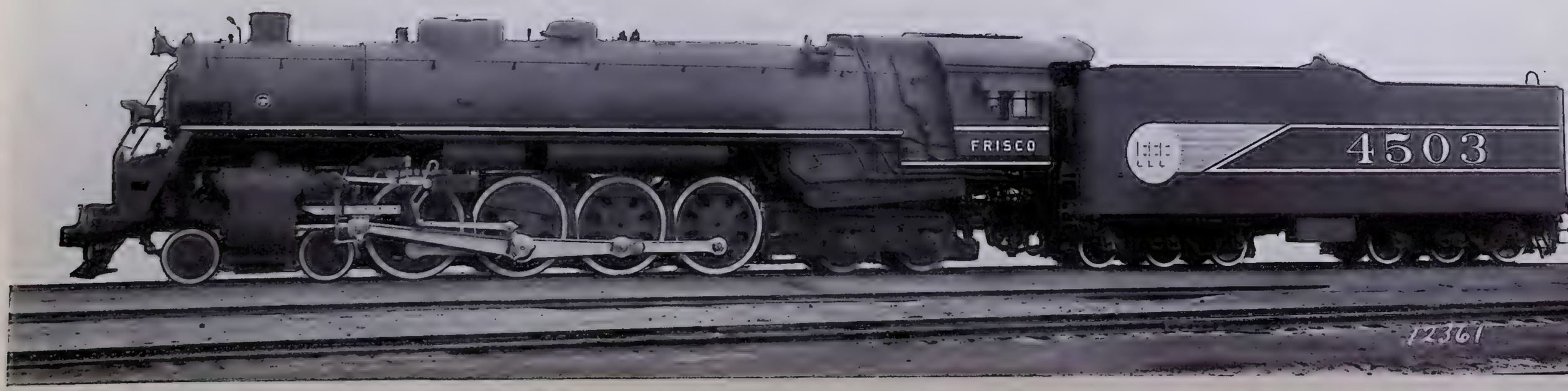
Road numbers of this series	4113-4117
Built	Baldwin, 1941
Cylinders, diameter and stroke, in.	28 x 31
Diameter of drivers, in.	73
Tractive force, lbs.	67,000
Boiler pressure, lbs. per sq. in.	240
Total weight of engine, lbs.	415,200
Weight on drivers, lbs.	269,116
Weight on leading truck, lbs.	79,627
Weight on trailing truck, lbs.	66,457
Weight of engine and tender, lbs.	735,800
Grate area, sq. ft.	79
Evaporative heating surface, sq. ft.	4511
Superheater heating surface, sq. ft.	1887
Tender capacity: Tons of coal	21
Gallons of water	23,000

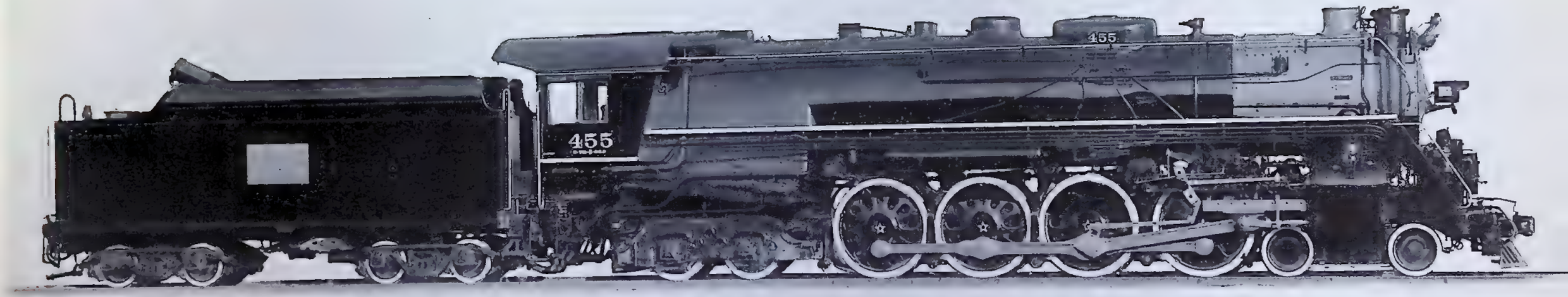
Lehigh & Hudson River Mountain type similar to B&M on preceding page

Road numbers of this series	10-12
Built	Baldwin, 1944
Cylinders, diameter and stroke, in.	28 x 31
Diameter of drivers, in.	73
Tractive force, lbs.	67,000
Boiler pressure, lbs. per sq. in.	240
Total weight of engine, lbs.	419,500
Weight on drivers, lbs.	268,500
Weight on leading truck, lbs.	83,000
Weight on trailing truck, lbs.	68,000
Weight of engine and tender, lbs.	743,750
Grate area, sq. ft.	79
Evaporative heating surface, sq. ft.	4511
Superheater heating surface, sq. ft.	1887
Tender capacity: Tons of coal	21
Gallons of water	23,000

Frisco Lines Northern type for freight or heavy passenger service

Road numbers of this series	4503-4514
Built	Baldwin, 1942
Cylinders, diameter and stroke, in.	28 x 31
Diameter of drivers, in.	74
Tractive force, lbs.	71,200
Boiler pressure, lbs. per sq. in.	255
Total weight of engine, lbs.	462,500
Weight on drivers, lbs.	279,630
Weight on leading truck, lbs.	79,900
Weight on trailing truck, lbs.	103,970
Weight on engine and tender, lbs.	803,800
Grate area, sq. ft.	88.3
Evaporative heating surface, sq. ft.	4766
Superheater heating surface, sq. ft.	1530
Tender capacity: Tons of coal	24
Gallons of water	18,000



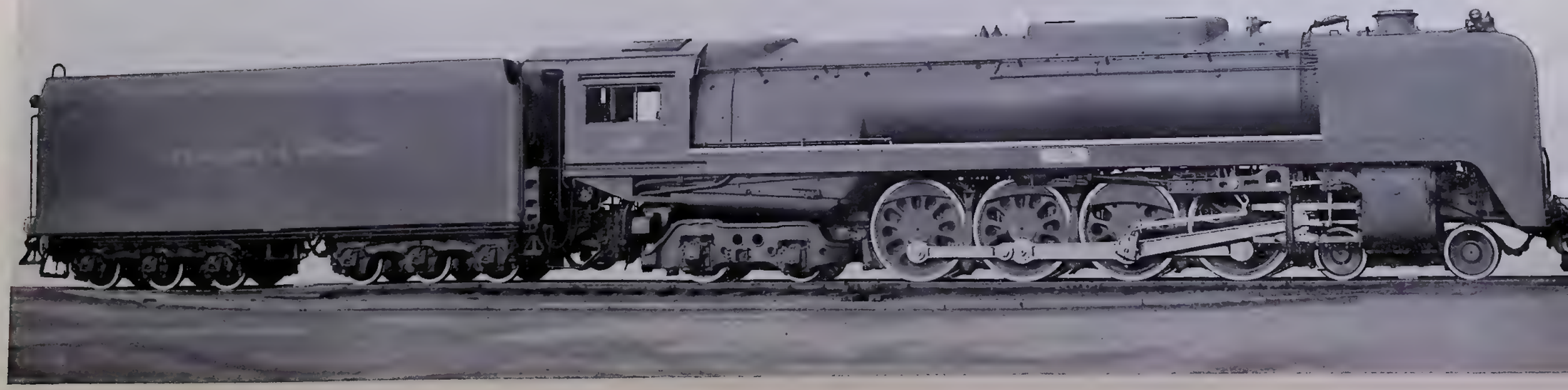


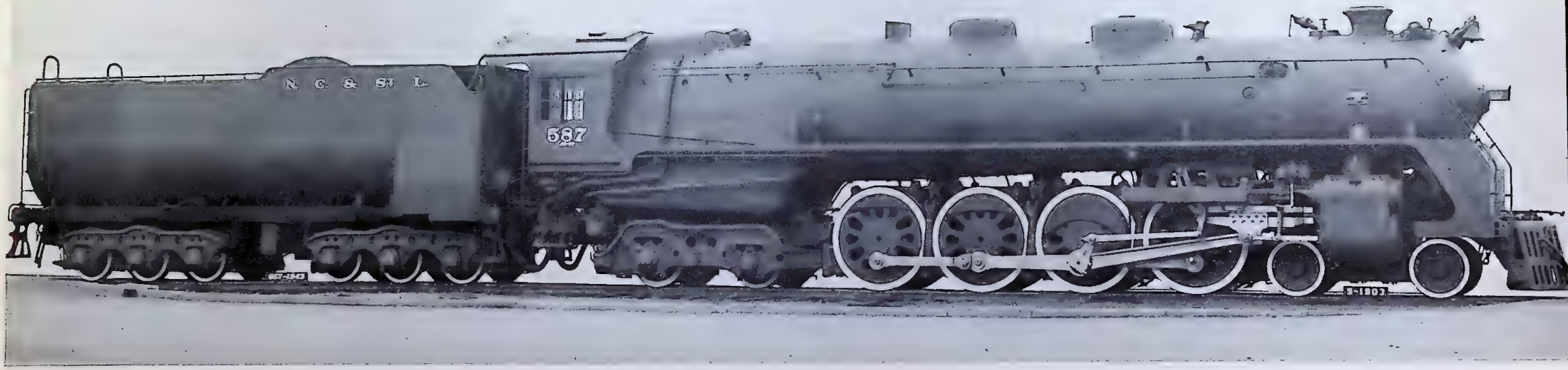
Central of Georgia Northern type locomotive for dual service

Road numbers of this series	451-458
Built	Lima, 1942
Cylinders, diameter and stroke, in.	27 x 30
Diameter of drivers, in.	73½
Tractive force, lbs.	63,200
Boiler pressure, lbs. per sq. in.	250
Total weight of engine, lbs.	447,200
Weight on drivers, lbs.	260,000
Weight on leading trucks, lbs.	78,900
Weight on trailing trucks, lbs.	108,300
Weight of engine and tender, lbs.	643,700
Grate area, sq. ft.	90.2
Evaporative heating surface, sq. ft.	4705
Superheater heating surface, sq. ft.	2059
Tender capacity: Tons of coal	21
Gallons of water	13,000

Delaware & Hudson Northern type freight locomotive

Road numbers of this series	300-314
Built	Alco, 1943
Cylinders, diameter and stroke, in.	24½ x 32
Diameter of drivers, in.	75
Tractive force, lbs.	62,040
Boiler pressure, lbs. per sq. in.	285
Total weight of engine, lbs.	470,000
Weight on drivers, lbs.	270,000
Weight on leading truck, lbs.	92,500
Weight on trailing truck, lbs.	107,500
Weight of engine and tender, lbs.	768,000
Grate area, sq. ft.	96.2
Evaporative heating surface, sq. ft.	4477
Superheater heating surface, sq. ft.	1473
Tender capacity: Tons of coal	25
Gallons of water	20,000



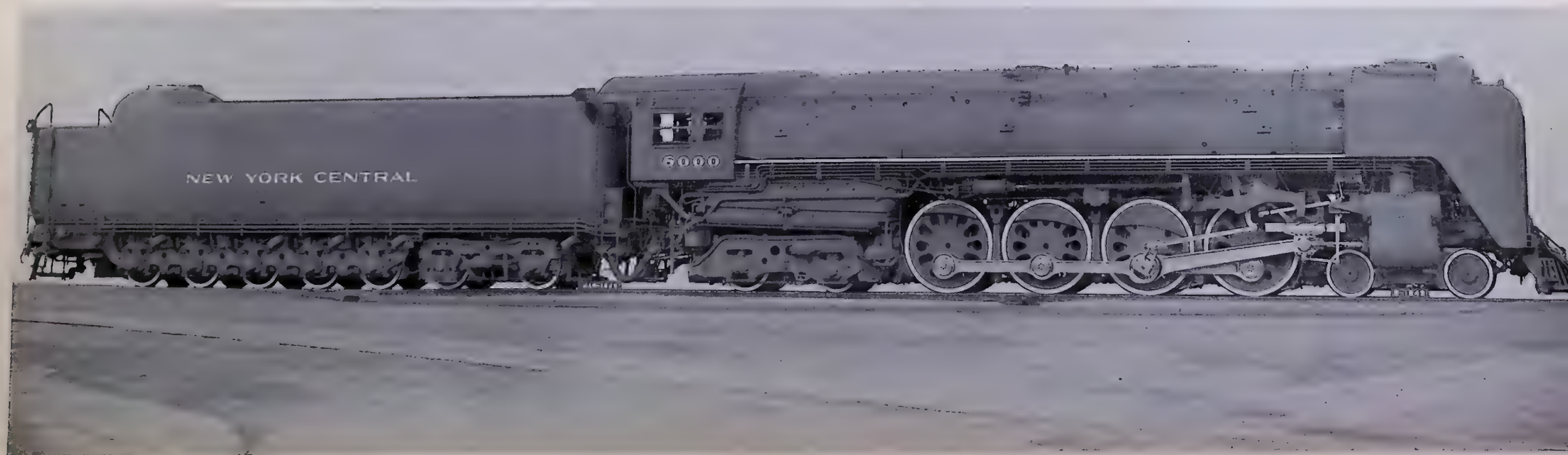


Nashville, Chatanooga & St. Louis Northern type dual service locomotive

Road numbers of this series	570-589
Built	Alco, 1943
Cylinders, diameter and stroke, in.	25 x 30
Diameter of drivers, in.	70
Tractive force, lbs.	57,000
Boiler pressure, lbs. per sq. in.	250
Total weight of engine, lbs.	399,000
Weight on drivers, lbs.	228,000
Weight on leading truck, lbs.	75,500
Weight on trailing truck, lbs.	95,000
Weight of engine and tender, lbs.	633,700
Grate area, sq. ft.	77.3
Evaporative heating surface, sq. ft.	4203
Superheater heating surface, sq. ft.	1721
Tender capacity: Tons of coal	16
Gallons of water	15,000

New York Central Niagara type dual service 6000 h.p. locomotive

Road numbers of this series	6000
Built	Alco, 1945
Cylinders, diameter and stroke, in.	25 x 32
Diameter of drivers, in.	75
Tractive force, lbs.	62,500
Boiler pressure, lbs. per sq. in.	275
Total weight of engine, lbs.	471,000
Weight on drivers, lbs.	275,000
Weight on leading truck, lbs.	91,000
Weight on trailing truck, lbs.	105,000
Weight of engine and tender, lbs.	808,400
Grate area, sq. ft.	100.1
Evaporative heating surface, sq. ft.	4632
Superheater heating surface, sq. ft.	1977
Tender capacity: Tons of coal	46
Gallons of water	18,000

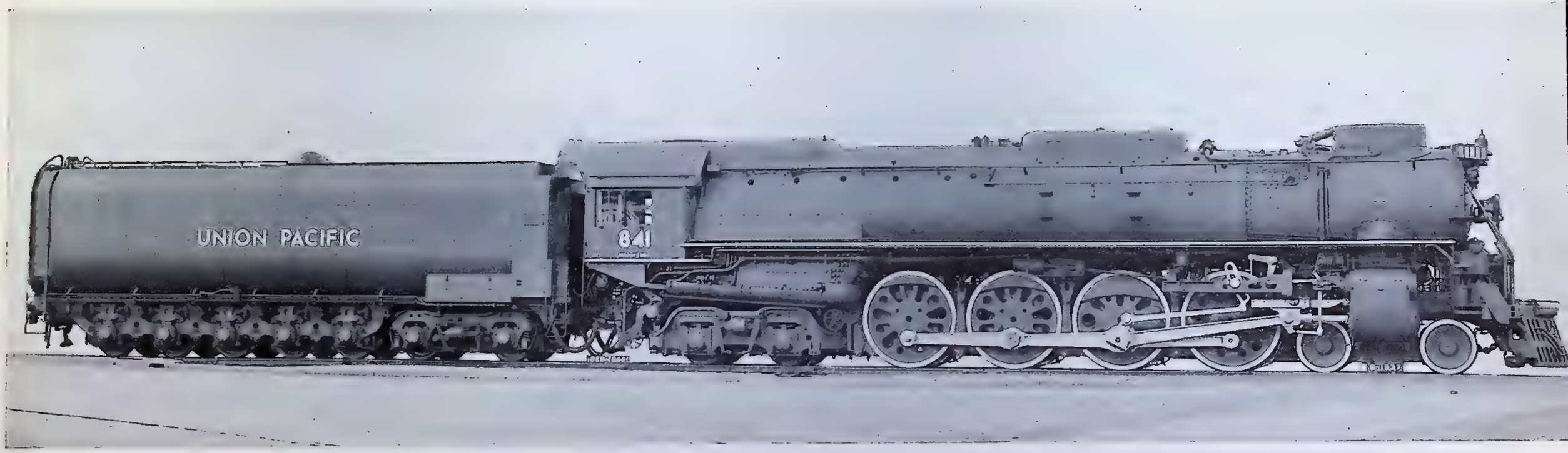


Rock Island dual service Northern type

Road numbers of this series	5100-5109
Built	Alco, 1944
Cylinders, diameter and stroke, in.	26 x 32
Diameter of drivers, in.	74
Tractive force, lbs.	67,000
Boiler pressure, lbs. per sq. in.	270
Total weight of engine, lbs.	467,000
Weight on drivers, lbs.	280,000
Weight on leading truck, lbs.	87,500
Weight on trailing truck, lbs.	99,500
Weight of engine and tender, lbs.	768,800
Grate area, sq. ft.	96.3
Evaporative heating surface, sq. ft.	4573
Superheater heating surface, sq. ft.	1438
Tender capacity: Gallons of oil	5500
Gallons of water	21,500

Norfolk & Western class J locomotive for heavy passenger service

Road numbers of this series	600-604
Built	N&W Roanoke Shops, 1943
Cylinders, diameter and stroke, in.	27 x 32
Diameter of drivers, in.	70
Tractive force, lbs. (with booster)	85,800
Boiler pressure, lbs. per sq. in.	275
Total weight of engine, lbs.	494,000
Weight on drivers, lbs.	288,000
Weight on leading truck, lbs.	90,000
Weight on trailing truck, lbs.	116,000
Weight of engine and tender, lbs.	872,600
Grate area, sq. ft.	107.7
Evaporative heating surface, sq. ft.	5271
Superheater heating surface, sq. ft.	2177
Tender capacity: Tons of coal	26
Gallons of water	22,000

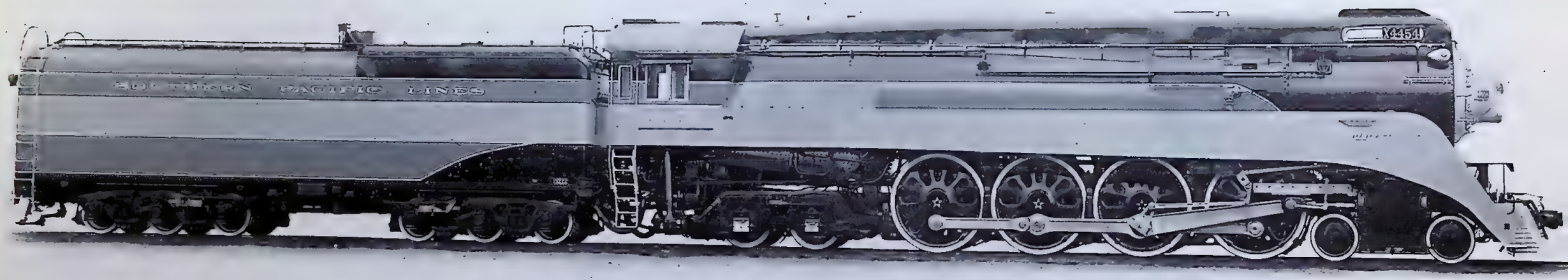


Union Pacific Northern type dual service locomotive

Road numbers of this series	835-844
Built	Alco, 1944
Cylinders, diameter and stroke, in.	25 x 32
Diameter of drivers, in.	80
Tractive force, lbs.	63,800
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	490,700
Weight on drivers, lbs.	270,300
Weight on leading truck, lbs.	100,600
Weight on trailing truck, lbs.	119,800
Weight of engine and tender, lbs.	902,100
Grate area, sq. ft.	100.2
Evaporative heating surface, sq. ft.	4294
Superheater heating surface, sq. ft.	1400
Tender capacity: Tons of coal	25
Gallons of water	23,500

Milwaukee Road class S-2, used principally in freight service

Road numbers of this series	200-229
Built	Baldwin, 1937
Cylinders, diameter and stroke, in.	26 x 32
Diameter of drivers, in.	74
Tractive force, lbs.	70,800
Boiler pressure, lbs. per sq. in.	285
Total weight of engine, lbs.	490,450
Weight on drivers, lbs.	282,320
Weight on leading truck, lbs.	87,800
Weight on trailing truck, lbs.	120,330
Weight of engine and tender, lbs.	887,450
Grate area, sq. ft.	106
Evaporative heating surface, sq. ft.	5509
Superheater heating surface, sq. ft.	2336
Tender capacity: Tons of coal	25
Gallons of water	20,000

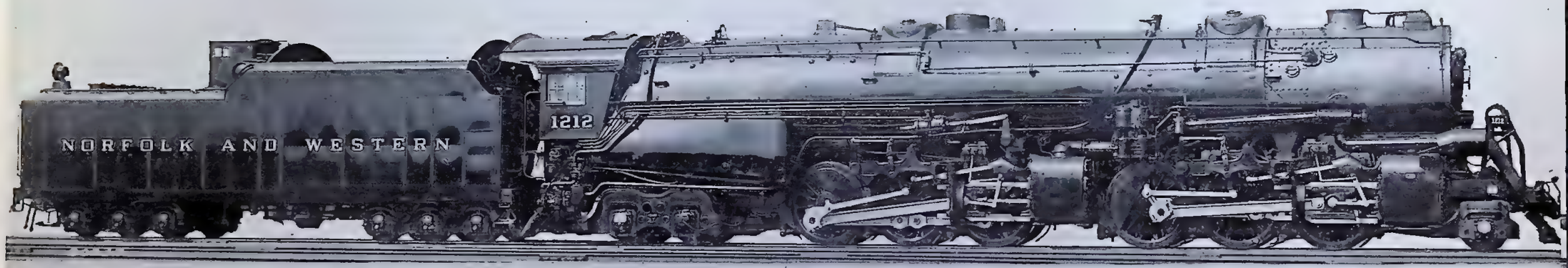


Southern Pacific General Service type locomotive

Road numbers of this series	4450-4457
Built	Lima, 1942
Cylinders, diameter and stroke, in.	25½ x 32
Diameter of drivers, in.	80
Tractive force, lbs. (with booster)	77,760
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	475,000
Weight on drivers, lbs.	275,700
Weight on leading truck, lbs.	81,300
Weight on trailing truck, lbs.	118,000
Weight of engine and tender, lbs.	798,730
Grate area, sq. ft.	90.4
Evaporative heating surface, sq. ft.	4887
Superheater heating surface, sq. ft.	2086
Tender capacity: Gallons of oil	5880
Gallons of water	23,300

Santa Fe Northern type freight locomotive

Road numbers of this series	2900-2929
Built	Baldwin, 1944
Cylinders, diameter and stroke, in.	28 x 32
Diameter of drivers, in.	80
Tractive force, lbs.	66,000
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	510,150
Weight on drivers, lbs.	293,860
Weight on leading truck, lbs.	93,820
Weight on trailing truck, lbs.	122,470
Weight of engine and tender, lbs.	879,840
Grate area, sq. ft.	108
Evaporative heating surface, sq. ft.	5312.5
Superheater heating surface, sq. ft.	2366
Tender capacity: Gallons of oil	7000
Gallons of water	24,500

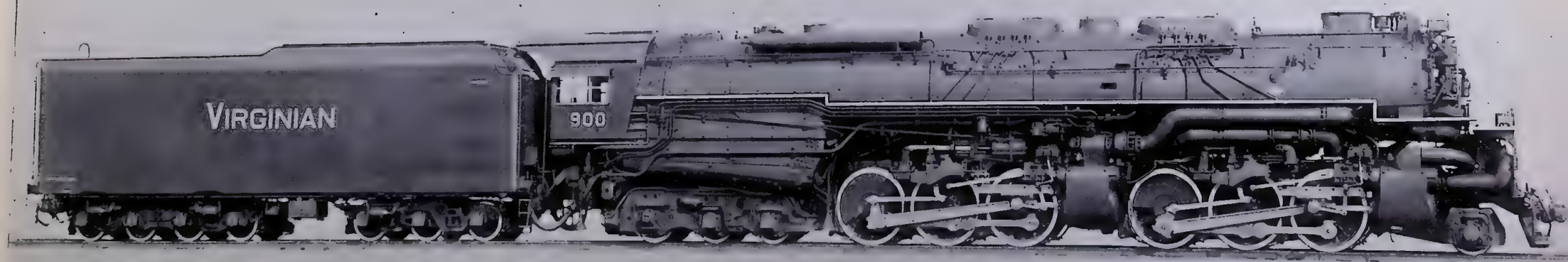


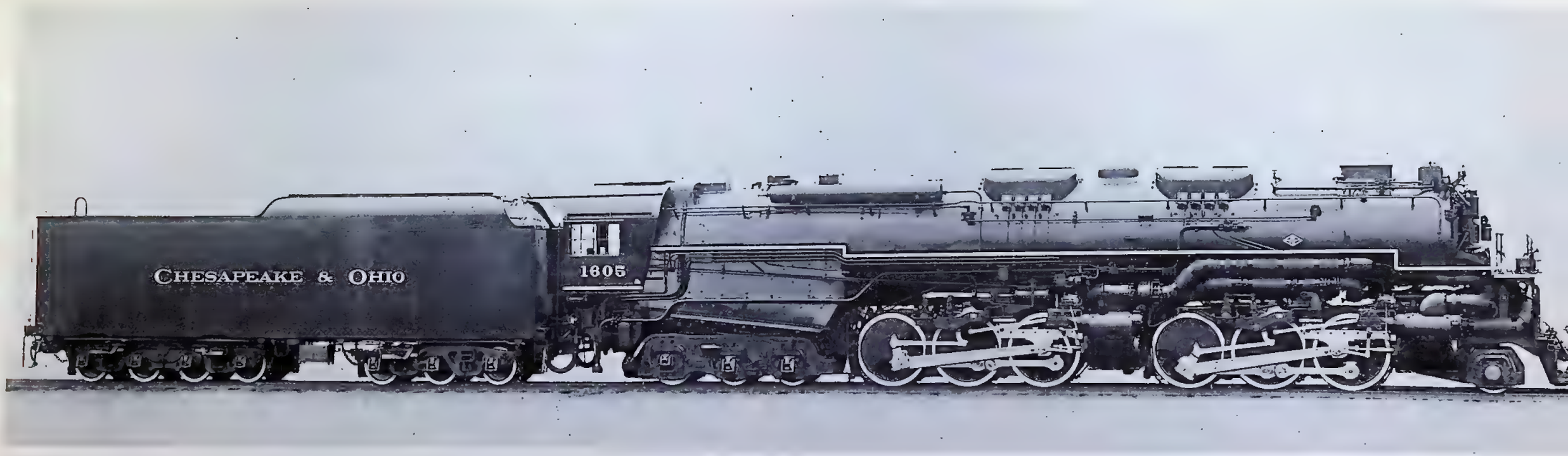
Norfolk & Western class A simple articulated for general service

Road numbers of this series	1210-1219
Built	N&W Roanoke Shops, 1943
Cylinders, diameter and stroke, in.	24 x 30
Diameter of drivers, in.	70
Tractive force, lbs.	114,000
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	573,000
Weight on drivers, lbs.	432,350
Weight on leading truck, lbs.	30,480
Weight on trailing truck, lbs.	110,170
Weight of engine and tender, lbs.	951,600
Grate area, sq. ft.	122
Evaporative heating surface, sq. ft.	6639
Superheater heating surface, sq. ft.	2703
Tender capacity: Tons of coal	26
Gallons of water	22,000

Virginia Alleghany type articulated, similar to C&O on next page

Road numbers of this series	900-907
Built	Lima, 1945
Cylinders, diameter and stroke, in.	22½ x 33
Diameter of drivers, in.	67
Tractive force, lbs.	110,200
Boiler pressure, lbs. per sq. in.	260
Total weight of engine, lbs.	753,000
Weight on drivers, lbs.	495,000
Weight on leading truck, lbs.	67,500
Weight on trailing truck, lbs.	190,500
Weight of engine and tender, lbs.	1,104,500
Grate area, sq. ft.	135.3
Evaporative heating surface, sq. ft.	6795
Superheater heating surface, sq. ft.	2922
Tender capacity: Tons of coal	25
Gallons of water	26,500





Chesapeake & Ohio Alleghany type articulated freight locomotive

Road numbers of this series	1600-1609
Built	Lima, 1942
Cylinders, diameter and stroke, in.	22½ x 33
Diameter of drivers, in.	67
Tractive force, lbs.	110,200
Boiler pressure, lbs. per sq. in.	260
Total weight of engine, lbs.	724,500
Weight on drivers, lbs.	471,000
Weight on leading truck, lbs.	64,500
Weight on trailing truck, lbs.	189,000
Weight of engine and tender, lbs.	1,066,100
Grate area, sq. ft.	135.2
Evaporative heating surface, sq. ft.	7240
Superheater heating surface, sq. ft.	3186
Tender capacity: Tons of coal	25
Gallons of water	25,000

Norfolk & Western compound articulated for heavy freight service

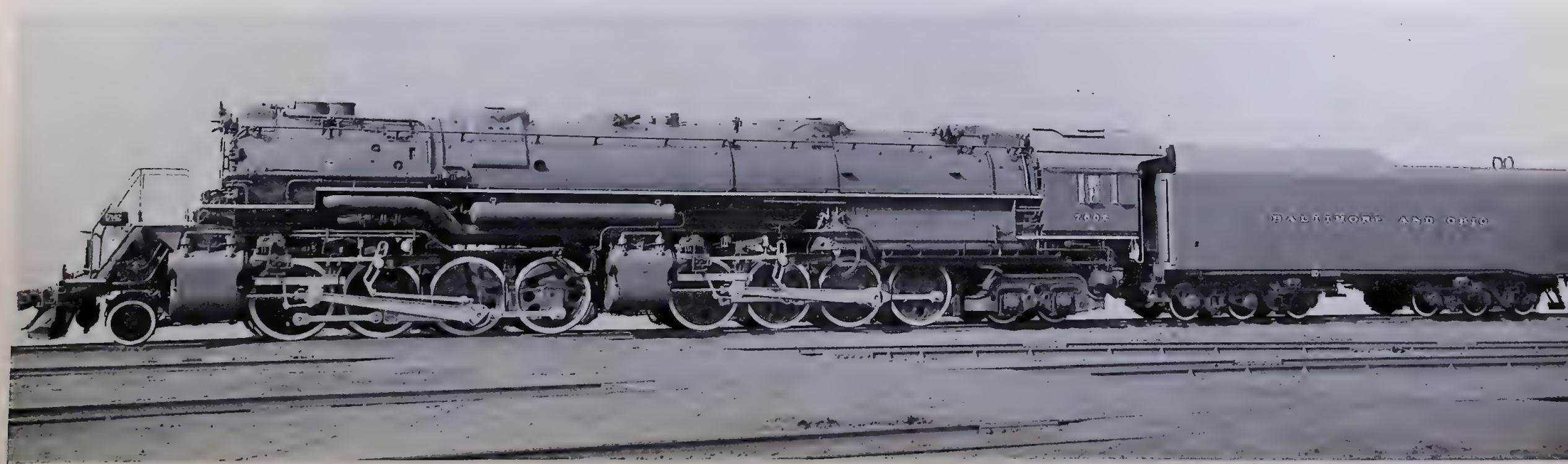
Road numbers of this series	2155-2170
Built	N&W Roanoke Shops, 1941
Cylinders, diameter and stroke, in.	25 and 39 x 32
Diameter of drivers, in.	57
Tractive force, lbs.	simple, 152,206; compound, 126,838
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	582,900
Weight on drivers, lbs.	522,850
Weight on leading truck, lbs.	32,200
Weight on trailing truck, lbs.	27,850
Weight of engine and tender, lbs.	961,500
Grate area, sq. ft.	106.2
Evaporative heating surface, sq. ft.	5656
Superheater heating surface, sq. ft.	1775
Tender capacity: Tons of coal	26
Gallons of water	22,000

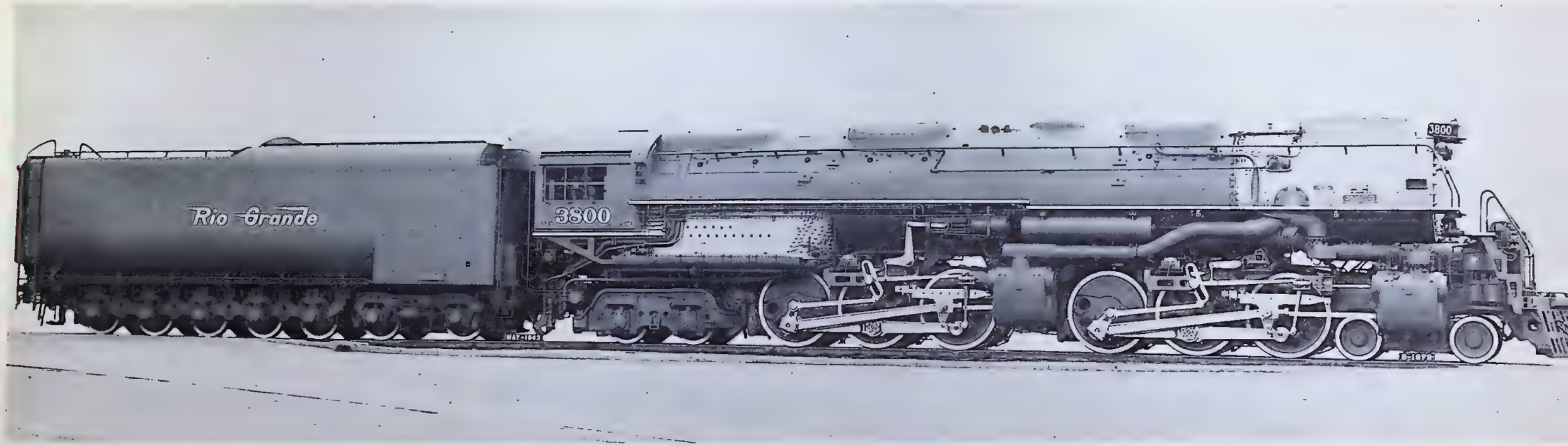
Duluth, Missabe & Iron Range simple articulated freight locomotive

Road numbers of this series	228-237
Built	Baldwin, 1943
Cylinders, diameter and stroke, in.	26 x 32
Diameter of drivers, in.	63
Tractive force, lbs.	140,000
Boiler pressure, lbs. per sq. in.	240
Total weight of engine, lbs.	699,700
Weight on drivers, lbs.	565,000
Weight on leading truck, lbs.	41,350
Weight on trailing truck, lbs.	93,350
Weight of engine and tender, lbs.	1,138,000
Grate area, sq. ft.	125
Evaporative heating surface, sq. ft.	6758
Superheater heating surface, sq. ft.	2770
Tender capacity: Tons of coal	26
Gallons of water	25,000

Baltimore & Ohio articulated locomotive for heavy freight service

Road numbers of this series	7600-7619
Built	Baldwin, 1944
Cylinders, diameter and stroke, in.	24 x 32
Diameter of drivers, in.	64
Tractive force, lbs.	115,000
Boiler pressure, lbs. per sq. in.	235
Total weight of engine, lbs.	628,700
Weight on drivers, lbs.	485,000
Weight on leading truck, lbs.	50,700
Weight on trailing truck, lbs.	93,000
Weight of engine and tender, lbs.	932,700
Grate area, sq. ft.	117.5
Evaporative heating surface, sq. ft.	5298
Superheater heating surface, sq. ft.	2118
Tender capacity: Tons of coal	25
Gallons of water	22,000



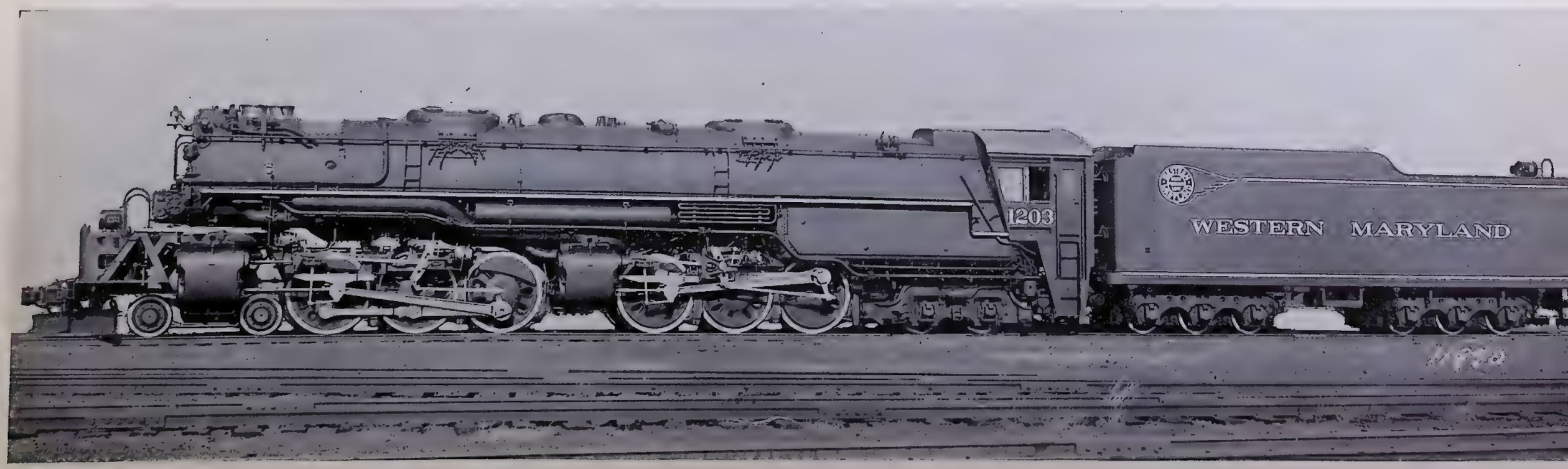


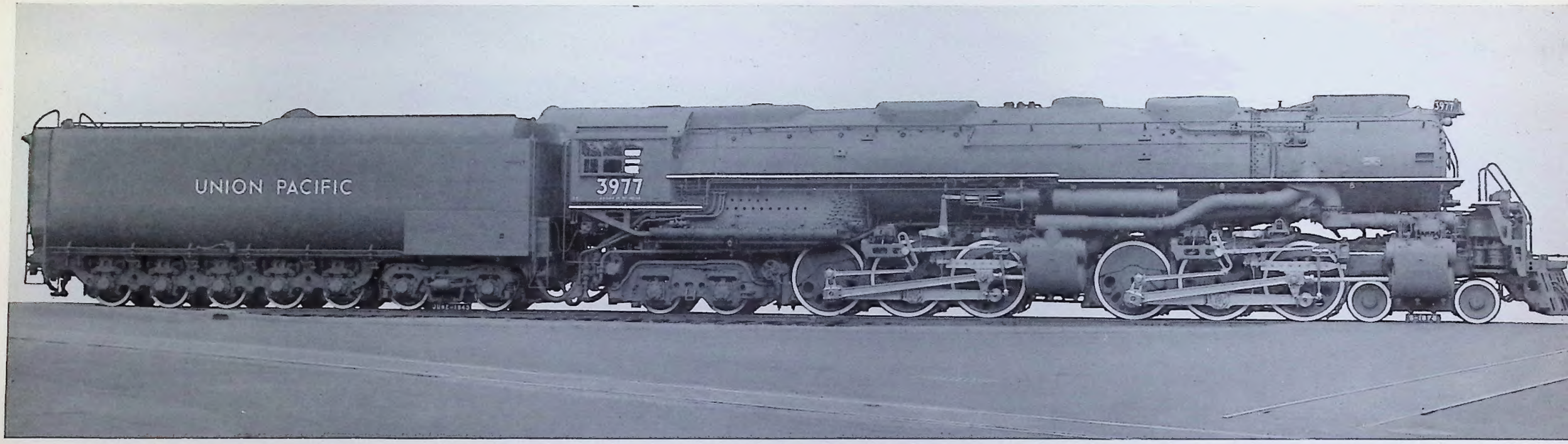
Denver & Rio Grande Western Challenger type

Road numbers of this series	3800-3805
Built	Alco, 1943
Cylinders, diameter and stroke, in.	21 x 32
Diameter of drivers, in.	69
Tractive force, lbs.	97,350
Boiler pressure, lbs. per sq. in.	280
Total weight of engine, lbs.	630,000
Weight on drivers, lbs.	405,500
Weight on leading truck, lbs.	101,500
Weight on trailing truck, lbs.	123,000
Weight of engine and tender, lbs.	978,000
Grate area, sq. ft.	132.2
Evaporative heating surface, sq. ft.	4795
Superheater heating surface, sq. ft.	2162
Tender capacity: Tons of coal	28
Gallons of water	25,000

Western Maryland Challenger type articulated

Road numbers of this series	1201-1212
Built	Baldwin, 1940
Cylinders, diameter and stroke, in.	22 x 32
Diameter of drivers, in.	69
Tractive force, lbs.	95,500
Boiler pressure, lbs. per sq. in.	250
Total weight of engine, lbs.	601,000
Weight on drivers, lbs.	402,266
Weight on leading truck, lbs.	81,500
Weight on trailing truck, lbs.	117,234
Weight of engine and tender, lbs.	939,250
Grate area, sq. ft.	118.8
Evaporative heating surface, sq. ft.	5770
Superheater heating surface, sq. ft.	1735
Tender capacity: Tons of coal	30
Gallons of water	22,000



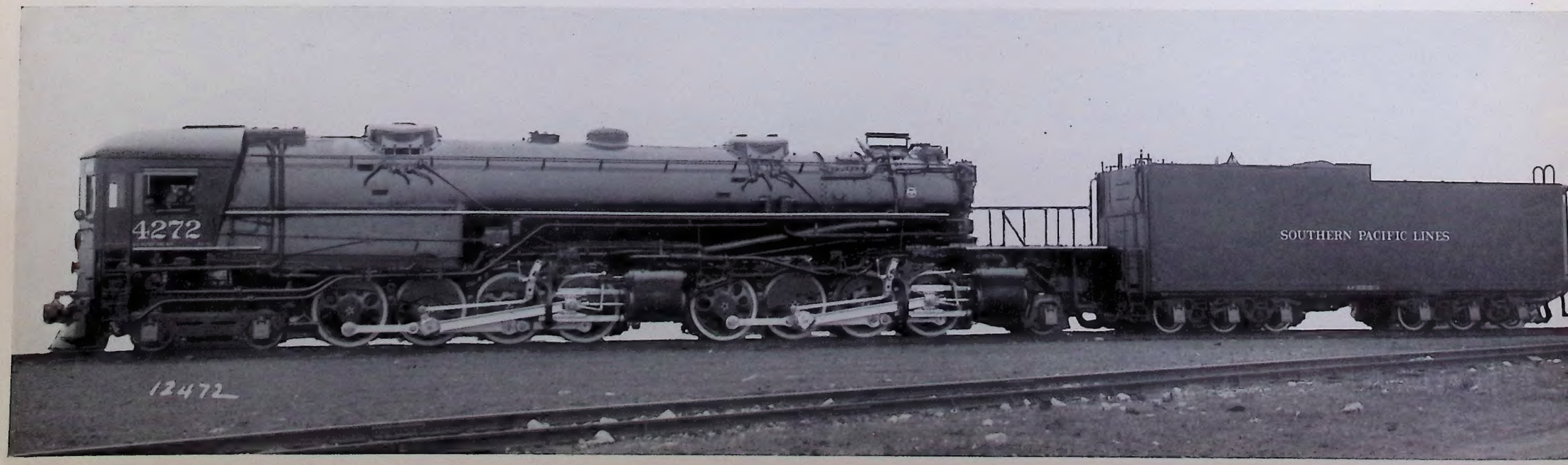


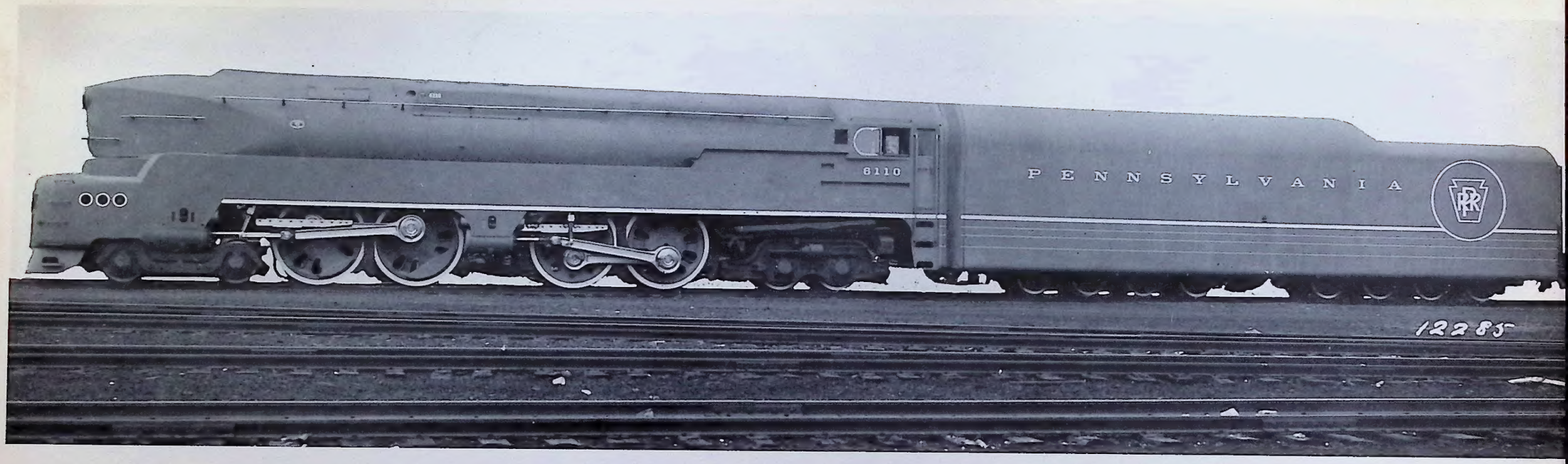
Union Pacific Challenger type dual service locomotive

Road numbers of this series	3975-3999
Built	Alco, 1943
Cylinders, diameter and stroke, in.	21 x 32
Diameter of drivers, in.	69
Tractive force, lbs.	97,350
Boiler pressure, lbs. per sq. in.	280
Total weight of engine, lbs.	633,500
Weight on drivers, lbs.	407,500
Weight on leading truck, lbs.	102,000
Weight on trailing truck, lbs.	124,000
Weight of engine and tender, lbs.	981,500
Grate area, sq. ft.	132.2
Evaporative heating surface, sq. ft.	4795
Superheater heating surface, sq. ft.	2162
Tender capacity: Tons of coal	28
Gallons of water	25,000

Southern Pacific cab-ahead Articulated Consolidation locomotive

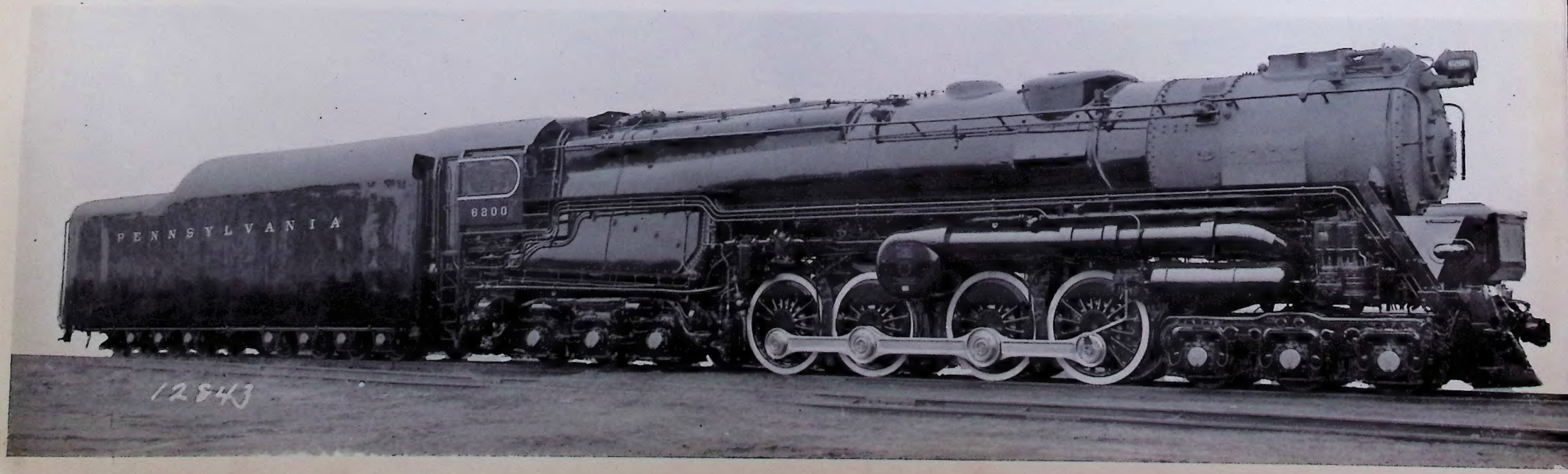
Road numbers of this series	4245-4274
Built	Baldwin, 1943
Cylinders, diameter and stroke, in.	24 x 32
Diameter of drivers, in.	63½
Tractive force, lbs.	124,300
Boiler pressure, lbs. per sq. in.	250
Total weight of engine, lbs.	657,900
Weight on drivers, lbs.	531,700
Weight on leading truck, lbs.	76,400
Weight on trailing truck, lbs.	49,800
Weight of engine and tender, lbs.	1,051,200
Grate area, sq. ft.	139
Evaporative heating surface, sq. ft.	6470
Superheater heating surface, sq. ft.	2616
Tender capacity: Gallons of oil	6100
Gallons of water	22,000





Pennsylvania Railroad non-articulated fast passenger locomotive

Road numbers of this series	6110-6111
Built	Baldwin, 1942
Cylinders, diameter and stroke, in.	19¾ x 26
Diameter of drivers, in.	80
Tractive force, lbs.	65,000
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	497,200
Weight on drivers, lbs.	268,200
Weight on leading truck, lbs.	100,200
Weight on trailing truck, lbs.	128,800
Weight of engine and tender, lbs.	930,200
Grate area, sq. ft.	92
Evaporative heating surface, sq. ft.	4209
Superheater heating surface, sq. ft.	1680
Tender capacity: Tons of coal	41
Gallons of water	19,500

Pennsylvania Railroad experimental direct geared turbine

Road numbers of this series	6200
Built	Baldwin, 1944
Diameter of drivers, in.	68
Tractive force, lbs.	forward, 70,500; reverse, 65,000
Horsepower of forward turbine	6900
Boiler pressure, lbs. per sq. in.	310
Total weight of engine, lbs.	580,000
Weight on drivers, lbs.	260,000
Weight on leading truck, lbs.	143,000
Weight on trailing truck, lbs.	177,000
Weight of engine and tender, lbs.	927,000
Grate area, sq. ft.	120
Evaporative heating surface, sq. ft.	5002
Superheater heating surface, sq. ft.	2050
Tender capacity: Tons of coal	37½
Gallons of water	18,000